**ORDER**

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

7100.9B

6/18/93

SUBJ: STANDARD TERMINAL ARRIVAL (STAR)

1. PURPOSE. This order provides guidance for management of the STAR program and for the development and review of STAR's.

2. DISTRIBUTION. This order is distributed to selected offices in Washington and regional headquarters, Aeronautical Center and FAA Technical Center, all Air Traffic/Flight Standards field facilities, International Aviation field offices.

3. CANCELLATION. Order 7100.9A, Standard Terminal Arrival (STAR), dated June 19, 1985, is canceled.

4. BACKGROUND. The STAR program was developed to reduce pilot/controller workload and air/ground communications by providing a preplanned arrival procedure printed in graphic and/or textual form. STAR's should be simple, understandable, and applicable to current air traffic control (ATC) radar/nonradar operations. In the arrival phase, pilots are to use the STAR chart as the primary navigational reference. This order provides guidelines to standardize the publication of STAR procedures.

5. DEFINITIONS.

a. Standard Terminal Arrival. A preplanned instrument flight rule (IFR) ATC arrival procedure published for pilot use in graphic and/or textual form. STAR's provide transition from the en route structure to an outer fix, arrival waypoint, or feeder/initial approach fix in the terminal area.

b. STAR Transition. A published segment used to connect one or more en route airways/jet routes to the basic STAR.

6. RESPONSIBILITIES.

a. Air Route Traffic Control Centers (ARTCC) shall:

(1) Initiate timely action to develop, revise, or cancel STAR's; assure that STAR's accurately reflect actual operating practices, and are accurately charted.

(2) Coordinate each new/revised procedure with the affected user organizations, managers, operators, and other ATC facilities.

* Requests for the Flight Inspection Field Offices (FIFO) to accomplish the requirements of paragraph 6b of this order shall be made to the regional Flight Standards Divisions through the regional Air Traffic Divisions.

(3) Ensure that all data is complete and accurate PRIOR to submission for processing and publication; e.g., mileages, minimum en route IFR altitudes (MEA), text, procedural data notes, fix names, computer codes, remarks, etc. Much of this information can be obtained and verified through the FIFO. *

(4) Coordinate the environmental aspects of STAR procedures to ensure that appropriate requirements have been met in accordance with the current edition of Order 1050.1, Policies and Procedures for Considering Environmental Impacts. Submit a statement summarizing environmental aspects of all new/revised STAR's to the regional Air Traffic Division. NOTE: The aviation noise abatement policy and Order 1050.11, Noise Control Planning, place primary responsibility on the airport proprietors for planning and implementing action designed to reduce the effect of noise on residents of the surrounding area. Airport proprietors can propose to the Federal Aviation Administration (FAA) preferential arrival flight tracks; however, changes in these flight tracks are subject to National Environmental Policy Act compliance.

(5) Initiate airspace actions when airways/routes can be efficiently designed to provide for the simplification or cancellation of STAR procedures.

(6) Conduct, as a minimum, an annual review of existing STAR's for accuracy, simplicity, standardization, obsolescence, and adherence to criteria in this order and the latest edition of Orders 8260.3, United States Standard for Terminal Instrument Procedures (TERPS) and 8260.19, Flight Procedures and Airspace. A copy of the * review will be forwarded to the appropriate regional office by June 1 of each year.

b. Flight Inspection Field Offices (FIFO) at the request of the Regional Air Traffic Divisions (ATD) shall:

(1) Verify that the MEA provides for Minimum Obstruction Clearance Altitude (MOCA), Minimum Reception Altitude (MRA), communications with ATC, and airspace requirements.

(2) Verify the courses, distances, and fix/waypoint coordinates as required. *

(3) Flight check as necessary to assure practicality and facility performance.

c. Regional Air Traffic Divisions (ATD) shall:

(1) Manage the regional STAR program.

* (2) Review each new or revised STAR procedure to ensure accuracy and compliance with the provisions of this Order. Forward the original signed procedure, two additional copies of the FAA Form 7100-4 (STAR - Standard Terminal Arrival) and attached graphic portrayal, plus two copies of the applicable FAA Form 8260-2 (Radio Fix and Holding Data Record) to the National Flight Data Center (NFDC), ATM-600, attention: ATM-613. *

(3) Evaluate each facility's annual review.

d. National Flight Data Center (NFDC) shall:

(1) Review and validate facility and routing data.

(2) Ensure accuracy of the procedure.

(3) Verify ATC STAR/STAR transition name(s) and computer code(s).

(4) Coordinate any errors or suggested changes with the regional office.

(5) Assign an effective date and publish the narrative description via the National Flight Data Digest (NFDD) authorizing the charting agencies to chart the procedure.

7. ORIGINATION OF NEW/REVISED STAR'S.

a. Recommendations may be submitted by users, airport proprietors, air traffic facilities, regional offices, or FAA headquarters offices.

b. Recommendations shall be submitted to the ARTCC serving the STAR location.

c. Originators shall consider, as a minimum, the following guidelines when submitting recommendations:

(1) The STAR should provide for a significant user/system benefit.

(2) The STAR should reduce pilot/controller communications and workload.

(3) The STAR procedure must be compatible with appropriate IFR arrival procedures.

* (4) STAR's shall include the geographical coordinates, with datum specified; e.g., NAD 83, for all NAVAID's, fixes, and waypoints on the basic STAR and each transition. Label routes as RNAV only when RNAV is the sole means of navigation utilized. Annotating waypoints as WP in the text and narrative, on the supporting FAA Form 8260-2, and on the graphic portrayal alerts cartographers to depict the fix as a waypoint rather than an intersection or DME fix. *

8. DEVELOPMENT CRITERIA.

a. General.

(1) STAR procedures must be simple and easily understood. Use only NAVAID's, fixes, or waypoints essential to control air traffic. Avoid depicting other data as this leads to undesirable chart clutter.

(2) A STAR/STAR transition should be developed to accommodate as many different types of aircraft as possible.

(3) A STAR/STAR transition arrival route shall commence at a fix; e.g., NAVAID, intersection, distance measuring equipment (DME) fix, or waypoint. Determine the fix by operational needs; however, it should be the last fix in the appropriate en route stratum. Waypoints are not depicted on en route charts except in Alaska. Avoid the depiction of low altitude NAVAID's, waypoints, and fixes on high altitude charts if at all possible.

(4) VORTAC facilities should be used, particularly, if the procedure serves military turbojet aircraft with tactical air navigation (TACAN) receivers. Avoid the use of DME arcs which make a procedure unusable for aircraft equipped only with very high frequency omnidirectional range (VOR) or whose DME receiver is inoperative.

(5) A STAR may serve one or more airports within a terminal area utilizing multiple SIAP's.

(6) Enter the appropriate MEA information, verified by the * FIFO, on FAA Form 7100-4 narrative portion and the graphic portrayal. The MEA of each segment shall not be higher than the preceding * segment.

(7) An airspeed restriction may be depicted for local flow procedures provided it is applicable at least 75 percent of the time. If more than one airspeed restriction per procedure is needed, it shall be coordinated with the users and approved by the region. Effective hours may be included where airspeed restrictions are not required at all times.

(8) STAR's should be compatible with local traffic flow management concepts.

(9) A STAR should terminate at an appropriate standard instrument approach procedure (SIAP) fix or an en route fix from which a terminal route can be provided to a SIAP fix for each * airport depicted on a STAR. Where possible, the FIFO incorporates the termination fix on the SIAP.

(10) Whenever possible, develop STAR's with DME fixes in lieu of intersections.

(11) Use notes to provide certain items of an informational nature or when limitations are necessary; e.g., services to be provided in conjunction with the procedure. Do not include items of an ATC clearance in notes.

(12) STAR procedures may be developed, within the criteria prescribed in this order and Order 8260.3, for aircraft using navigation systems capable of point-to-point flight; e.g., INS, RNAV, GPS, Flight Management System, etc.

(13) Holding patterns referred to in the text and narrative shall be clearly depicted on the graphic display.

b. Naming and Numbering of STAR's.

(1) STAR/STAR transitions should, where possible, be named to correspond with the fix name where the procedure commences. All fixes and identifiers used shall comply with provisions of the air traffic operational codes Order and Order 7350.6, Location Identifier handbook.

(2) Do not use names which imply direction as a part of the name, e.g., north, east, etc. Do not use duplicate STAR names and avoid the use of similar sounding STAR names.

(3) Number each original STAR procedure "one"; e.g., "Kent One Arrival." Number subsequent revisions in numerical sequence through "nine" and then start over at "one." Renumber STAR's only when procedural changes are made. Procedural changes are changes * that affect the actual procedure; e.g., fix, course, altitude or published minimum. Do not renumber the STAR if individual transitions are cancelled or if minor editorial changes are made. Minor editorial changes are minor corrections resulting from changes in facility frequencies, variation changes, etc., or by other minor changes not affecting the actual procedure.

* c. Computer Identification Codes for STAR's.

(1) STAR computer codes will be assigned by using the "NAVAID" three-letter identifier or "intersection" five-letter name where the STAR commences. The identifier/name is shown twice, *

* separated by a dot and suffixed with a numeral (1 through 9). Examples: The Knox Two Arrival begins at the Knox VORTAC (OXI); the computer code is OXI.OXI2. The Blunt Seven Arrival begins at BLUNT intersection; the computer code is BLUNT.BLUNT7.

(2) STAR transition computer codes are similarly assigned. The STAR transition code is assigned by using the NAVAID identifier or intersection name marking the beginning of the transition, followed by a dot, followed by the identifier/name of the STAR. Examples: The Fort Wayne Transition to the Knox Two Arrival begins at the Fort Wayne VORTAC (FWA); the computer code is FWA.OXI2. The DINTY Transition to the SADDE Four Arrival begins at the DINTY intersection; the computer code is DINTY.SADDE4.

d. NAVAID/Fix Description. All NAVAID's, radials, and DME distances depicting route segments shall be clearly indicated on the STAR. DME fix mileage shall be based on NAVAID's defining the STAR course and not the NAVAID defining the crossing radial which makes up the fix.

e. STAR/STAR Transition Route Information.

(1) Always include a complete textual description of the routing in the procedural data section of FAA Form 7100-4.

(2) To ensure correct publication of all data, submit a graphic illustration of all information included on the narrative.

(3) A STAR may have one or more transitions. Transitions may be common to more than one STAR.

f. Fix and Holding Pattern Criteria.

(1) Publish STAR fixes and associated holding patterns on en route low and high altitude charts when they are used for the en route control of air traffic not associated with the STAR. Publish fixes and holding patterns on arrival charts when they are used for the control of arrival traffic into a specified area.

(2) A published holding pattern depicted at a fix on a low/high altitude en route or area chart shall be published on any STAR chart that depicts the same fix.

(3) Publish only one holding pattern at each fix depicted on any of the specified charts.

g. Obstacle Clearance/Noise Abatement.

(1) Criteria for obstacle clearance is contained in Orders 8260.3 and 8260.19. The FIFO verifies obstacle clearance and/or MEA for all STAR procedures.

(2) STAR's shall not be established solely for the purpose of noise abatement, however, existing noise abatement procedures should be incorporated into the basic STAR/STAR transition.

* (3) Crossing altitude restrictions may be established for traffic separation.

h. Communications.

(1) The minimum frequency requirement for depiction is one VHF and one UHF (where available) for automatic terminal information system (ATIS)/automated weather observation system (AWOS) at each airport served by the STAR, plus one VHF and one UHF approach control frequency. The maximum number of additional frequencies shall not exceed one VHF and one UHF for tower and ground control. Include one VHF and one UHF ARTCC frequency only when there is no terminal facility involved. *

(2) Control frequencies shall not be included in the arrival text.

(3) Unless needed for obstacle/terrain clearance, do not include lost communications procedures as part of a STAR. If lost communications procedures are incorporated in the STAR, annotate that portion of the procedure "ROUTE DEPICTED FOR LOST COMMUNICATIONS."

9. PROCESSING AND PUBLICATION. Regional ATD's shall establish processing priorities in coordination with ARTCC's and NFDC.

a. Civil STAR'S.

(1) During coordination with FIFO, ARTCC's shall submit FAA Form 8260-2 in accordance with Order 8260.19 for all new, revised, or canceled fixes established on STAR's.

(2) Prior to submission to the regional office, ARTCC's shall coordinate with and obtain approval from all affected air traffic control facilities.

* (3) To ensure publication on schedule, submit any new or revised STAR to the FIFO at least 20 weeks prior to the desired effective charting date. This allows the FIFO adequate time to verify all required data and enables flight inspection of the procedure in a timely manner. *

(4) After the procedures are coordinated and completed, ARTCC's shall submit FAA Form 7100-4 (one clear original and four copies) and attached graphics, two copies of the applicable FAA Form 8260-2, and a listing of all affected preferred routes to the regional ATD.

(5) Regional ATD's shall submit FAA Form 7100-4 (original signed procedure and two copies) with attached graphics, two copies of the applicable FAA Form 8260-2, and applicable preferred route changes to NFDC.

(6) To ensure publication on schedule, submit all data to arrive at NFDC at least 10 weeks prior to the desired effective date. NOTE: STAR's may be effective only on airspace charting dates and are not published in Change Notices. Include the requested publication date in the cover letter.

(7) NFDC publishes the narrative description of the STAR (FAA Form 7100-4) in the NFDD prior to the cutoff date for the desired charting date. This will give charting agencies adequate time for charting.

(8) Facilities shall use the NFDD to: VERIFY ACCURACY, TO ENSURE THAT PROCEDURES HAVE BEEN PROCESSED, AND TO ALERT FACILITY AUTOMATION PERSONNEL OF THE EFFECTIVE DATES OF NEW OR REVISED PROCEDURES.

(9) Facilities must take immediate corrective action whenever errors are discovered. Immediately notify NFDC of charting errors or mistakes which effect flying safety. It is sometimes possible to make minor editorial corrections up to the charting cutoff dates. Direct telephone coordination with NFDC is authorized for such corrections provided all required coordination/notification is accomplished. Corrections will be made as follows:

(a) Charting errors will be corrected by NFDC issuing a FDC NOTAM indicating the correction.

* (b) Other errors/omissions noted after cut off dates will be corrected by the submitting agency issuing a Temporary NOTAM; then, NFDC will reissue the corrected STAR by NFDD using the NOTAM date as the effective date.

(10) ARTCC's should retain copies of the latest FAA Form 7100-4 published in the NFDD for reference when submitting revisions or corrections. Complete all blocks on FAA Form 7100-4.

(11) After appropriate coordination, ARTCC's shall submit STAR cancellation requests and a listing of affected preferred route changes to the regional ATD. An information copy of the cancellation request and the FAA Form 7100-4 shall be forwarded to the FIFO; however, FIFO signature is not required for STAR cancellation. Regional ATD's shall submit three copies of FAA Form 7100-4 and the preferred route changes to NFDC to arrive at least 10 weeks prior to the requested cancellation date. The form must include the name and number of the STAR and all affected airports with associated city/state.

b. Military STAR'S.

(1) FAA requires that military STAR's be coordinated with and approved by the FAA ATC facility having jurisdiction over the National Airspace System (NAS).

(2) After agreement between the military services and the FAA ATC facility, military STAR's shall be processed the same as civil STAR's with the FAA facility acting as the focal point for the military.

(3) Military STAR's should be named and numbered according to the criteria outlined in this order.

(4) Military STAR's will be published in the U.S. Government Flight Information Publication STAR booklet or volume.

(5) Regional ATD's shall review military STAR's at least annually and make appropriate recommendations to the responsible military services for improvement of the NAS. ARTCC's/regional ATD's should encourage the military to apply concepts in this order insofar as it is practicable.

(6) When military STAR's affect airspace under the jurisdiction of FAA facilities, those facilities/ARTCC's shall maintain copies of the military STAR.

c. FAA Form 7100-4 Instructions. Block:

(1) Transition Names. Name of each transition.

(2) Transition Routes.

(a) From Fix/NAVAID. Fix/NAVAID where each transition begins.

(b) To Fix/NAVAID. Fix/NAVAID where each transition ends.

(c) Via Transition Route. Description of each transition route.

* (d) MEA. MEA along transition route. By definition, this altitude also encompasses the MRA. If transitions share a common segment, make sure the MEA for that segment is the same for each transition. If it is the intention to have different MEA's on a common segment, note that in block (8) Remarks. *

(e) MOCA. MOCA along transition route.

* (f) MAA. MAA along transition route.

NOTE: MOCA and MAA are listed on the form as an aid to the controller. Do not publish them on the graphic portrayal as they would confuse the pilot and have an adverse human factors impact on the safety and efficiency of the STAR.

(g) Distance. Enter distances between fixes on the transition route in miles and hundredths of a mile; e.g., 78.65 NM. Charting agencies round as necessary to publish the information.

(h) Transition Computer Code. Enter computer identification code per paragraph 8c.

(3) Arrival Route Description. Provide a textual description of the STAR route. Include only information pertinent to the arrival procedure. In parenthesis, include any MEA's and/or MOCA's that are desired; e.g., (MEA 5000, MOCA 2500). *

(4) Lost Communications Procedures. Enter lost communications procedures, if required, to be included in the textual description. Leave blank when procedures are the same as in FAR 91.185.

(5) Procedural Data Notes. Any information that is to appear in note form on the graphic depiction; e.g., DME required, airspeed restrictions, etc.

* (6) Communications. Enter name of radio communications to be charted; e.g., ATIS, AWOS, Approach Control, etc. Specify frequency only if different than what is currently published for the facility or unique to the procedure.

(7) Fixes and/or Holding Patterns. Enter only NAVAID's/intersections for which charting is requested that are not included in the textual description of the STAR (block (3)) or STAR transition route (block (2)). Ensure the accompanying FAA Form 8260-2 contains charting instructions for holding patterns supporting the STAR. *

(8) Remarks. Any additional charting instructions. Procedural data notes not to be charted may be added here by the FIFO or ARTCC for controller information.

(9) Airports Served. List all airports, city, and two-letter state code served by the STAR.

(10) Arrival Name. Enter name of STAR.

(11) Number. Enter STAR number (spelled out).

(12) STAR Computer Code. Enter computer identification code per paragraph 8c.

(13) Superseded Number. STAR number superseded by this procedure.

(14) Dated. Date of superseded procedure.

(15) Effective Date. Effective date of the new STAR procedure (coordinated with NFDC).

(16) Graphic Portrayal for Charting Guidelines. Include an up-to-date, clear graphic depiction of the procedure. Do not include a text write-up of transitions or arrival route.

(17) Other Pertinent Data. Use this space for additional comments to assist the charting agency.

(18) Reason for Changes Submitted. List reasons for revising the procedure; e.g., relocation of NAVAID's, sector boundary, realignment of airways, etc.

d. FAA Form 7100-3 Instructions. Use this form as a continuation sheet with FAA Form 7100-4, if required.

10. FORMS AVAILABILITY. Initial supply of revised forms will be sent to all affected facilities by July 1993. Additional forms will be stocked in the Logistics Center and available under the NSN's listed below after August 1993.

a. STAR - Standard Terminal Arrival, FAA Form 7100-4; NSN 0052-00-844-3003; Unit of issue: sheet.

b. Standard Terminal Arrival (continuation sheet), FAA Form 7100-3; NSN 0052-00-869-2002; Unit of issue: sheet.

L. Lane Speck
Director, Air Traffic Rules
and Procedures Service

U.S. Department of Transportation
Federal Aviation Administration

# STAR — Standard Terminal Arrival

1. Bearings, headings, courses and radials are magnetic.
2. Distances are in nautical miles.
3. Altitudes are minimum altitudes unless otherwise indicated.

**(1) Transition Name/s:** 1. FORT WAYNE 2. BRIGGS 3. DRYER 4. WATERVILLE

**(2) Transition Routes**

| From FIX/NAVAID | To FIX/NAVAID | Via Transition Route | MEA | MOCA | MAA | DIST | Transition Computer Codes |
|---|---|---|---|---|---|---|---|
| (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) |
| 1. FORT WAYNE VORTAC | KNOX VORTAC | FWA311 SPANN OXI095 OXI | 14000 | | | 68 | FWA.OXI3 |
| 2. BRIGGS VORTAC | KNOX VORTAC | BSV286 OXI095 OXI SPANN OXI 095 OXI | FL180 14000 | | | 240 | BSV.OXI3 |
| 3. DRYER VORTAC | KNOX VORTAC | DJB270 OXI095 OXI SPANN OXI 095 OXI | FL180 14000 | | | 204 | DJB.OXI3 |
| 4. WATERVILLE VOR/DME | KNOX VORTAC | VWV248 OXI095 OXI SPANN OXI 095 OXI | FL180 14000 | | | 141 | VWV.OXI3 |

**(3) Arrival Route Description:**
FROM OVER KNOX VORTAC VIA OXI R-297 TO PLANT INTERSECTION, THENCE DIRECT ORD TVOR. EXPECT VECTORS TO FINAL APPROACH COURSE.

**(4) Lost Communication Procedures:**

**(5) Procedural Data Notes:**
CHART TURBOJET VERTICAL NAVIGATION PLANNING INFORMATION:
CROSS PLANT INTERSECTION AT 11,000 FEET.

**(6) Communications:**
CHART COMMMUNICATIONS FOR ATIS AND APPROACH CONTROL

**(7) Fixes and/or Holding Patterns:** CHART HOLDING SE OF OXI VORTAC R-117, LT; SE OF HALIE INTERSECTION, OXI R-297, LT; E OF WATSN INTERSECTION, OXI R-095, LT.

**(8) Remarks**

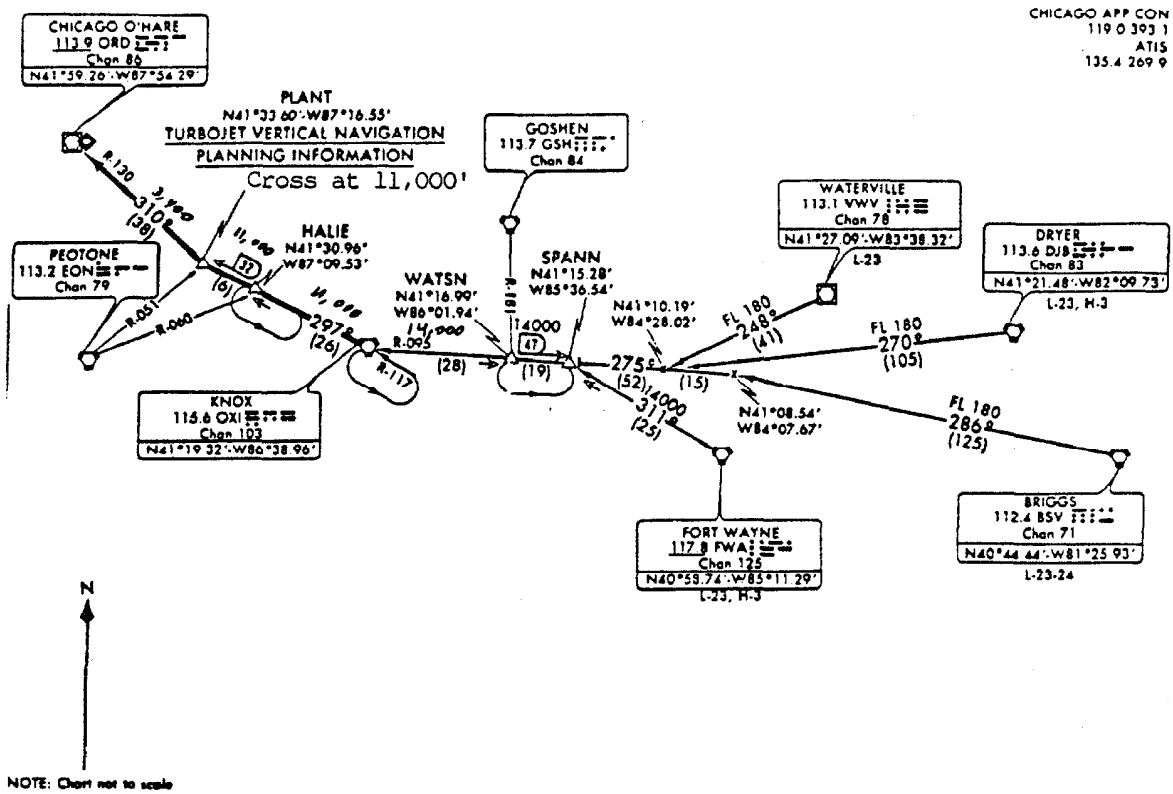
**(9) Airports Served**

| | | | |
|---|---|---|---|
| Airport Name | CHICAGO O'HARE INTERNATIONAL | City/State | CHICAGO, IL |
| Airport Name | | City/State | |
| Airport Name | | City/State | |
| Airport Name | | City/State | |
| Airport Name | | City/State | |
| Airport Name | | City/State | |

| (10) Arrival Name | (11) Number | (12) STAR Computer Code | (13) Superseded Nr. | (14) Dated | (15) Effective Date |
|---|---|---|---|---|---|
| KNOX | THREE | OXI.OXI3 | KNOX TWO | | |

FAA Form 7100-4 (6-93) Supersedes Previous Edition

**(16) Graphic Portrayal for Charting Guigelines:**



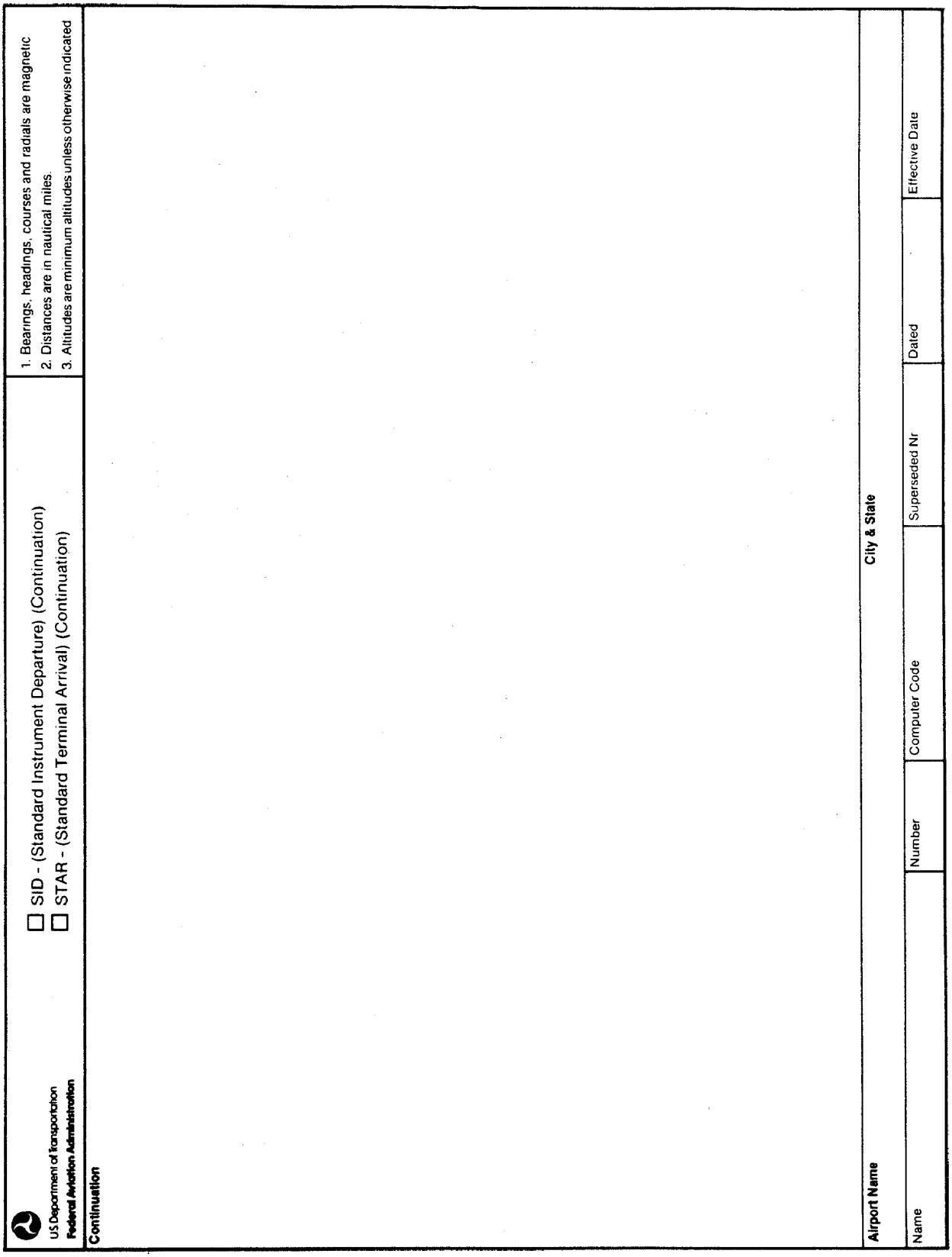

**(17) Other Pertinent Data:**

**(18) Reasons for Changes Submitted:**

(1) ELIMINATION OF THE KOKOMO TRANSITION

| | Name *(Typed and Signed)*, Title and Organization | | Date |
|---|---|---|---|
| **Developed By** | DONALD R. MAXWELL, AM-AIRSPACE AND PROCEDURES CHICAGO ARTCC | | 8/6/92 |
| **Approved By** | FIFO | JOHN E. LAWRENCE, MANAGER, BTL FIFO | 1/22/93 |
| | Reg. ATD | WILLIAM J. COOK, TRAFFIC MNGT/PROCEDURES AGL-532E | 2/1/93 |

# APPENDIX 2. STAR CONTINUATION SHEET (FAA FORM 7100-3)



U.S. Department of Transportation
Federal Aviation Administration

☐ SID - (Standard Instrument Departure) (Continuation)
☐ STAR - (Standard Terminal Arrival) (Continuation)

1. Bearings, headings, courses and radials are magnetic
2. Distances are in nautical miles.
3. Altitudes are minimum altitudes unless otherwise indicated

Continuation

Airport Name | City & State

| Name | Number | Computer Code | Superseded Nr | Dated | Effective Date |
|---|---|---|---|---|---|

FAA Form 7100-3 (6-86) SUPERSEDES PREVIOUS EDITION